

Appl. No. : 10/713,845
Filed : November 14, 2003

REMARKS

Claims 23-39, 41-43, and 45-65 are pending and claims 1-22, 40, and 44 are canceled. Claim 46 is amended herein.

Allowed/Allowable Claims

Applicants note with appreciation that Claims 23-39, 48-60, and 63-65 are allowed and that Claims 46-47 are allowable if rewritten in independent form to include all of the limitation of the base claim and any intervening claims. Claim 46 and Claim 47, which depends from and includes all of the limitations of Claim 46, are now allowable, as Claim 46 has been rewritten in independent form to include all of the limitation of the base claim and any intervening claims.

Rejections Under 35 U.S.C. §102

Claims 41-43, 45, and 61-62 are rejected under 35 U.S.C. §102(b) as being anticipated by Radens et al., U.S. Patent No. 6,251,710. Applicants respectfully disagree that Claims 41-43, 45, and 61-62 are anticipated by Radens et al., and traverse the rejection.

As noted in the previously filed response, Radens et al. do not disclose or suggest depositing metal within the opening to form the conductive contact, wherein depositing metal within the opening comprises depositing a blanket metal layer, and etching the blanket metal to form a metal line, as recited in independent Claim 45. Similarly, Radens et al. do not disclose or suggest depositing a conductive material over the dielectric layer such that the vias are filled with the conductive material and a conductive layer is formed over the dielectric layer and the filled vias, and etching the conductive layer to form a plurality of conductive lines above the dielectric layer and the filled vias, as recited in independent Claim 61.

In the previously filed response, Applicants noted that the Radens et al. anti-fuse dielectric layer 54 is the only layer in Radens et al. that meets the insulating layer and dielectric layer limitations of independent Claims 45 and 61, as it is the only layer in Radens et al. that is disclosed as being less than about 100 nm. Applicants also noted that while Radens et al. disclose forming a via 58 in the anti-fuse dielectric layer 54 and filling it with a conductive

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material 64 using conventional deposition processes, Radens et al. do not teach or suggest etching a layer of conductive material over the dielectric layer 54 to form a metal/conductive line, as the material left is anti-fuse material in the shape of a via, not a metal line. In response, the Examiner contends in the Final Office Action that the Radens et al. reference “does disclose the formation of a type of metal line” and that “[t]he term metal line is sufficiently broad that it would read on the formation of the conductive via in an ILD.” However, Applicants respectfully submit that the skilled artisan would not understand the term “metal line” to read on a conductive via in an ILD. The term “via” is defined as a “hole etched in the interlayer dielectric which is then filled with metal, usually tungsten, to provide *vertical connection between stacked up interconnect metal lines*.” Semiconductor OneSource: Semiconductor Glossary, www.semiconductorglossary.com (emphasis added); *see also* Applied Materials, Inc. Technical Glossary, <http://www.appliedmaterials.com/products/glossary.html> (defining “via” as “holes through dielectric layers, opened by etching. Metal will be deposited in the via to form a plug and create an interconnect between two metal lines”). A via is therefore commonly understood in the art to be a vertical connection between stacked metal lines, and is not understood by the skilled artisan to be a metal line. Thus, contrary to the Examiner’s assertion, the term “metal line” is not sufficiently broad to read on a conductive via in an ILD and Radens et al. do not teach or suggest etching a metal or conductive layer over the dielectric layer to form a metal or conductive line, as recited in Claims 45 and 61.

Applicants appreciate that, in examination, the PTO has the right to apply the “broadest reasonable interpretation” to the claims. However, that authority is not without limits and the “interpretation must be consistent with the one that those skilled in the art would reach.” In re Cortwright, 49 U.S.P.Q.2d 1464, 1467 (Fed. Cir. 1999). As noted above, the Examiner’s interpretation of “metal line” to encompass a filled “via” in an ILD is inconsistent with the skilled artisan’s interpretation.

Independent Claims 45 and 61 are therefore patentable as they are not anticipated by Radens et al. Claims 41-43 and 62, which depend from and include all of the limitations of Claim 45 or 61, are therefore also patentable over Radens et al. Furthermore, each of the dependent claims recites additional distinguishing features of advantage and utility.

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Conclusion


Applicants respectfully submit that all of the pending claims are patentably distinguishable over the art of record. The cited references, either alone or in combination, do not teach or suggest Applicants' claimed invention.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: 
Tina Chen
Registration No. 44,606
Attorney of Record
Customer No. 20,995
(415) 954-4114

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